

## REMARKS

Claims 1-26 remain in the present application. Claims 1, 6, 8, 21 and 23 are amended herein. Applicant respectfully submits that no new matter has been added as a result of the Claim amendments. Applicant respectfully requests further examination and reconsideration of the rejections based on the arguments set forth below.

### Claim Objections

Claims 6 and 20-21 are objected to because of informalities. Claims 6 and 21 have been amended in response to the objections to correct the informalities.

### Claim Rejections – 35 U.S.C. §102

Claims 1-2, 5, 8-9, 12, 17 and 23-24 are rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent Number 5,742,142 to Witt (hereafter referred to as "Witt"). Applicant has reviewed the cited reference and respectfully submits that the embodiments of the present invention as recited in Claims 1-2, 5, 8-9, 12, 17 and 23-24 are neither anticipated nor rendered obvious by Witt for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 1 that recites a fan speed controller comprising (emphasis added):

a pulse width modulation generator for generating a pulse width modulation signal, wherein an operating frequency of said pulse width modulation generator is approximately within the range of 200-1,000 KHz;  
and

a drive stage circuit coupled to said pulse width modulation generator and for switch mode converting a supply voltage into a linear

voltage for driving a fan, wherein a voltage level of said linear voltage is a function of said pulse width modulation signal.

Independent Claims 8 and 23 recite limitations similar to independent Claim 1. Claims 2 and 5 depend from independent Claim 1 and recite further limitations to the claimed invention. Claims 9, 12 and 17 depend from independent Claim 8 and recites further limitations to the claimed invention. Claim 24 depends from independent Claim 23 and recites further limitations to the claimed invention.

Applicants respectfully submit that Witt fails to teach or suggest the limitations of “wherein an operating frequency of said pulse width modulation generator is approximately within the range of 200-1,000 KHz” as recited in independent Claim 1. As claimed and described in the present application, a pulse width modulation generator generates a pulse width modulation (PWM) signal for controlling the speed of a fan. The PWM signal may range in frequency from approximately 200 to 1000 kHz.

In contrast to the claimed embodiments, Applicant understands Witt to teach the generation of a PWM signal from 20 to 100 kHz for controlling the speed of a fan (col. 3, lines 8-10). Given that that the 20-100 kHz range as taught by Witt does not overlap the 200-2000 kHz range as claimed, Applicant respectfully submits that Witt fails to teach or suggest a PWM signal of approximately 200-2000 kHz as claimed.

Furthermore, Applicant respectfully submits that the claimed range of 200-2000 kHz is not obvious in light of the 20-100 kHz range taught by Witt given that the upper end of Witt’s range is half that of the lower end of the claimed range. Although the rejection (e.g., page 6) states that Witt teaches that the range may be extended, Applicant respectfully disagrees. Instead, Witt sets forth the 20-

100 kHz range and then proceeds to discuss the effect of varying the frequency *within that range* (col. 3, lines 10-12). As such, Witt teaches away from the claimed embodiments by setting forth a range with an upper boundary that is half of the lower boundary of the claimed range, where Witt also fails to teach or suggest that the upper boundary may be extended.

Moreover, Witt expressly teaches that it is important to select an inductor with a large enough value for current supply reasons (col. 3, lines 4-5). Witt also teaches that increasing the frequency of the PWM value will reduce the size of the required inductor (col. 3, lines 10-11). As such, Witt effectively teaches away from increasing the upper boundary, especially where the upper boundary would have to be more than doubled to overlap the claimed range of 200-2000 kHz, thereby teaching away from the claimed embodiments.

For these reasons, Applicant respectfully submits that independent Claim 1 is neither anticipated nor rendered obvious by Witt, thereby overcoming the 35 U.S.C. §102(b) rejection of record. Since independent Claims 8 and 23 contain limitations similar to those discussed above with respect to independent Claim 1, independent Claims 8 and 23 also overcome the 35 U.S.C. §102(b) rejections of record. Since dependent Claims 2, 5, 9, 12, 17 and 24 recite further limitations to the invention claimed in their respective independent Claims, Claims 2, 5, 9, 12, 17 and 24 are also neither anticipated nor rendered obvious by Witt. Thus, Claims 1-2, 5, 8-9, 12, 17 and 23-24 are therefore allowable.

Claim Rejections – 35 U.S.C. §103

Claims 3-4, 10-11, 13-16 and 25-26

Claims 3-4, 10-11, 13-16 and 25-26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Witt in view of United States Patent Number 6,801,004 to Frankel et al. (hereafter referred to as “Frankel”). Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 3-4, 10-11, 13-16 and 25-26 are not rendered obvious by Witt in view of Frankel for the following reasons.

Applicants respectfully submit that Frankel, either alone or in combination with Witt, fails to cure the deficiencies of Witt discussed above with respect to independent Claim 1. Specifically, Frankel fails to teach or suggest the limitations of “wherein an operating frequency of said pulse width modulation generator is approximately within the range of 200-1,000 KHz” as recited in independent Claims 1, 8 and 23. Consequently, since Claims 3-4, 10-11, 13-16 and 25-26 recite further limitations to the invention claimed in their respective independent Claims, Claims 3-4, 10-11, 13-16 and 25-26 are not rendered obvious by Witt in view of Frankel. Thus, Claims 3-4, 10-11, 13-16 and 25-26 overcome the 35 U.S.C. §103(a) rejection of record, and are therefore allowable.

Furthermore, Applicant respectfully submits that Frankel fails to teach or suggest the limitations of “a second transistor having a... source coupled to said drain of said first transistor and to said second terminal of said inductor” as recited in independent Claim 10. As described and claimed in the present application, a first and second transistor are coupled to an inductor as part of a driving circuit for switch mode converting a supply voltage into a linear voltage for driving a fan.

In contrast to the claimed embodiments, Applicants understand Frankel to teach a pair of transistors directly coupled to a stator of a fan motor instead of an inductor as claimed (Figure 3B). The rejection states on page 4 that the transistors couple to element 380, and that 380 is an inductor. However, Applicants respectfully disagree given that Frankel refers to element 380 as a stator, which Applicant submits is very different from an inductor as claimed. Additionally, given that a stator is a component of a fan motor, Frankel teaches *directly* driving the motor with a PWM signal instead of first switch mode converting the PWM signal to a linear voltage for powering a fan as described. Thus, Applicant respectfully submits that Claim 10 is further allowable for these additional reasons.

#### Claims 6-7 and 18-22

Claims 6-7 and 18-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Witt. Applicant has reviewed the cited reference and respectfully submits that the embodiments of the present invention as recited in Claims 6-7 and 18-22 are not rendered obvious by Witt given that Claims 6-7 and 18-22 depend from and recite further limitations to the invention claimed in allowable independent Claims 1 and 8.

CONCLUSION

Applicant respectfully submits that Claims 1-26 are in condition for allowance and Applicant earnestly solicits such action from the Examiner.

The Examiner is urged to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,

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